

AUGUST 2015

# SPACE LAUNCH SYSTEM HIGHLIGHTS

## The Journey to Mars Continues with Final RS-25 Tests of the Series

Media and social media followers had the opportunity to tour NASA's Stennis Space Center near Bay St. Louis, Mississippi, and see the powerful RS-25 engine fire up **for testing** Aug. 13. NASA Social participants were updated on progress from NASA and prime contractor Aerojet Rocketdyne representatives, including surprise guest, NASA Deputy Administrator Dava Newman. Guests also got a first-hand look at the newly renovated Pegasus barge, which will transport the SLS core stage. More pictures can be viewed on **Flickr**.  
(NASA/MAF)



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## Final RS-25 Tests of the Series (cont'd)

On Aug. 27, NASA **concluded the series** with a seventh RS-25 hot-fire test on the A-1 Test Stand at Stennis. The test ran for a full-duration 535 seconds. “The completion of this test series is an important step in getting SLS ready for the journey to Mars,” said Steve Wofford, engines manager at NASA’s Marshall Space Flight Center in Huntsville, Alabama. “The RS-25 engine gives SLS a proven, high performance, affordable main propulsion system. It is one of the most experienced large rocket engines in the world, with more than a million seconds of ground test and flight operations time.”



(NASA/MAF)



(NASA/MSFC)



(NASA/MSFC)



(NASA/MAF)



(NASA/MAF)



(NASA/Stennis)

## SLS Program Manager Todd May Named Deputy Director of Marshall Center



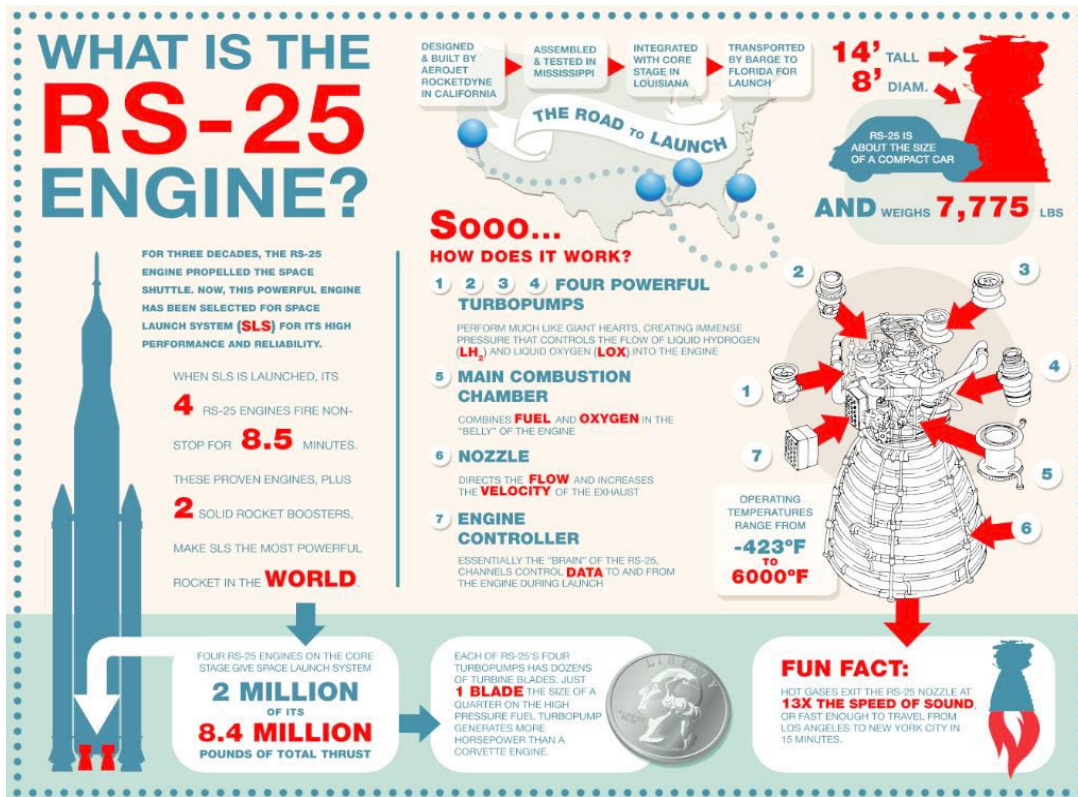
SLS Program Manager Todd May **has been appointed** deputy director of NASA's Marshall Space Flight Center in Huntsville, Alabama. May succeeds Teresa Vanhooser, who has been Marshall's deputy director since November 2012 and is retiring after a 35-year NASA career. (NASA/MSFC)

## NASA Stennis Marks Milestone in Return to Deep-Space Missions

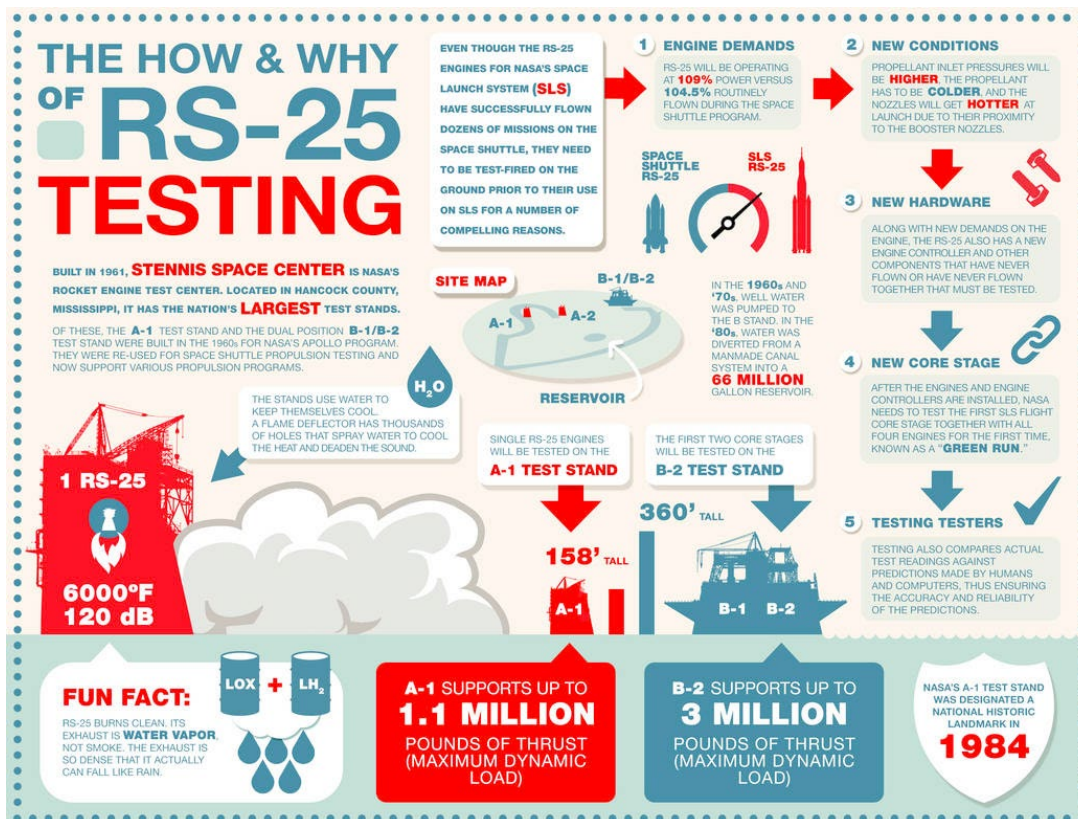
NASA moved 100 feet closer to its return to deep-space missions in August with the **completion of a steel tower for tests** of SLS. Engineers completed the addition of about 1 million pounds of structural steel work on the SLS core stage test frame on the B-2 Test Stand at the agency's Stennis Space Center near Bay St. Louis, Mississippi. (NASA/Stennis)



# Learn More about RS-25



What is the RS-25 Engine?  
(NASA/MSFC)



The How & Why of RS-25 Testing  
(NASA/MSFC)

## Spaceflight Partners: CRM Solutions Inc.

*EDITOR'S NOTE: Every month, Space Launch System Highlights turns the spotlight on one of the many industry partners helping to create the largest rocket ever built for human space exploration. In this issue, we profile CRM Solutions Inc. of Huntsville, Alabama.*

Headquartered in Huntsville, Alabama, CRM Solutions Inc. is a small business providing engineering services since 1997 in support of NASA and Department of Defense launch vehicles. CRM began with a group of subject-matter experts in computational fluid dynamics (CFD), all with strong backgrounds in commercial CFD-code development. CFD uses mathematics, physics and computational software to predict how a gas or liquid flows, as well as how the gas or liquid affects objects as it flows past them.

In the years since its inception, company expertise has evolved to encompass almost all technical areas required for launch vehicle engineering analysis. CRM helped pioneer computational studies for multiple, moving-body problems such as stage and separation events.

For NASA's Space Launch System, CRM has recently partnered with Teledyne Brown Engineering of Huntsville, providing and leading a systems analysis team for the Launch Vehicle Stage Adapter (LVSA). Current contributions span a large technical spectrum, including simulation of the shared-volume environment between the Interim Cryogenic Propulsion Stage (ICPS) and the LVSA from roll-out through core stage separation. The shared-volume environment is the space the LVSA shares with the ICPS.

CRM also models internal pressures during ascent to provide a map of the differences in skin pressure along the primary structure. CFD models have been created to determine how hazardous gasses are distributed within the interior of the structure, to ensure that mixture flammability is not a possibility. The team additionally provides external thermal analysis for LVSA in all phases of flight, and also performs vibration and acoustic analysis and internal acoustic predictions. Finally, CRM performs debris impact analysis to assess and mitigate structural damage.



Some of the equipment CRM Solutions Inc. uses for simulations, analysis and other work for SLS.  
(CRM Solutions Inc.)

Finally, in addition to creating a coupled loads model, the team assists in structural and stress analysis of the primary and secondary structures. These types of modeling and analyses are critical to ensuring the structural integrity and performance of the SLS launch vehicle stage adapter.

## On the Road...



SLS talks rockets with Space Camp Elite Academy attendees Aug. 4 at the U.S. Space and Rocket Center in Huntsville. (NASA/MSFC)




SLS was part of "NASA Lands at the Exploreum" on Aug. 8 at the Gulf Coast Exploreum Science Center in Mobile, Alabama. (NASA/MSFC)

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#JOURNEYTOMARS



FACES OF SLS

**Barry Robinson**

This tenor saxophone player is part of "tuning" up the B-2 test stand for America's next great rocket, NASA's Space Launch System. Meet Barry Robinson, engineering project manager at NASA's Stennis Space Center.

 **Stennis Space Center**

Learn more about **Barry Robinson**.

## SLS on Deck:

- Seattle vendor visit
- SLS base heating testing concludes
- Welding under way on Launch Vehicle Spacecraft Adapter (LVSA)